

1      WHAT IS CLAIMED IS:

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1. A device comprising:

a chip;

a resin package sealing said chip, said resin package having resin projections located on a mount-side surface of the resin package;

10      metallic films respectively provided to the resin projections; and

connecting parts electrically connecting electrode pads of said chip and the metallic films.

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20      2. The device as claimed in claim 1,  
wherein each of said metallic films is a single layer  
made of a metallic substance.

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3. The device as claimed in claim 1,  
wherein each of said metallic films comprises a plurality of metallic layers which are stacked.

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4. The device as claimed in claim 1,  
the connecting parts respectively comprise  
plurality of metallic films.

110 5. The device as claimed in claim 1,  
wherein:

5 said connecting parts respectively comprise  
bonding wires, and bonding balls respectively provided  
to the metallic films; and

115 said bonding wires are bonded to said  
electrode pads and said bonding balls.

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110 6. The device as claimed in claim 1,  
wherein said resin package is a molded package so that  
the resin projections are integrally formed.

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110 7. The device as claimed in claim 1,  
20 wherein said resin package includes a first resin  
portion on which the chip is provided, and a second  
resin portion which covers the chip.

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110 8. The device as claimed in claim 7,  
wherein:

30 said connecting parts respectively comprise  
bonding wires, and connection electrodes which are  
provided on said first resin portions and extend, into  
the resin projections, to the metallic films; and  
said bonding wires are bonded to the

1               9. The device as claimed in claim 8,  
wherein said resin projections respectively have  
through holes through which the connection electrodes  
extend to the metallic films.

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10              10. A device comprising:  
a chip;  
a resin package sealing said chip and having  
a first resin portion and a second resin portion, said  
chip being provided on said first resin portion and  
covered by said second resin portion;  
15              connecting parts having bonding wires and  
connection electrodes, said connection electrodes  
being provided on the first resin portion and  
projecting therefrom; and  
metallic films respectively provided to the  
20 connection electrodes of said connecting parts.

25              11. A device comprising:  
a chip;  
a resin package sealing said chip and having  
a first resin portion and a second resin portion, said  
chip being provided on said first resin portion and  
30 covered by said second resin portion, the first resin  
portions having through holes;  
electrode parts provided to said first resin  
portion so as to respectively cover the through holes;

1. Said chip and said structural parts

1               12. The device as claimed in claim 11,  
wherein said first resin portion comprises a resin  
tape.

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10              13. The device as claimed in claim 11,  
wherein said connecting parts respectively comprise  
bonding wires, which are bonded to the electrode pads  
and the electrode parts.

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14. A device comprising:  
a chip;  
a resin package sealing said chip, said  
resin package having resin projections located on a  
mount-side surface of the resin package, said resin  
projections extending downwards from the mount-side  
surface and laterally extending from at least one side  
surface of the resin package;  
metallic films respectively provided to the  
resin projections; and  
connecting parts electrically connecting  
electrode pads of said chip and the metallic films.

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15. The device as claimed in claim 14,  
wherein each of said metallic films is a single layer  
made of a metallic substance.

1               16. The device as claimed in claim 14,  
wherein each of said metallic films comprises a  
plurality of metallic layers which are stacked.

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10              17. The device as claimed in claim 14,  
wherein said connecting parts respectively comprise  
bonding wires, which are bonded to the electrode pads  
and said metallic films.

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18. The device as claimed in claim 14,  
wherein:

20              said connecting parts respectively comprise  
bonding wires, and bonding balls respectively provided  
to the metallic films; and  
                  said bonding wires are bonded to said  
electrode pads and said bonding balls.

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19. The device as claimed in claim 14,  
wherein said resin package is a molded package so that  
the resin projections are integrally formed.

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20. The device as claimed in claim 14.

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21. The device as claimed in claim 14,  
wherein said resin projections laterally extend from  
only one side surface of said resin package.

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22. The device as claimed in claim 20,  
further comprising supporting members provided to said  
10 resin package, said supporting members supporting the  
device vertically mounted on a circuit board.

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23. A device comprising:  
a chip;  
a resin package sealing said chip, said  
resin package having resin projections located on a  
20 mount-side surface of the resin package, said resin  
projections extending downwards from the mount-side  
surface and being substantially flush with a side  
surface of the resin package;  
metallic films respectively provided to the  
25 resin projections; and  
connecting parts electrically connecting  
electrode pads of said chip and the metallic films.

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24. The device as claimed in claim 23,  
wherein:  
said resin projections comprise first

upper resin projections positioned above the chip, said upper  
projections extend below the chip; and

1           said metallic films comprise first metallic  
films provided on the first projections, and second  
metallic films provided on the second projections.

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10           25. The device as claimed in claim 23,  
further comprising a spacer to be provided to the  
mount-side surface of said resin package, wherein said  
spacer is in contact with another device when said  
device is supported on a circuit board so that said  
side surface of the resin package faces the circuit  
board.

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20           26. The device as claimed in claim 25,  
wherein said spacer is a heat radiating member.

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    27. A method of producing devices  
respectively having chips sealed by resin packages,  
said method comprising:

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(a) forming a lead frame having a base  
having recess portions respectively having metallic  
films;

(b) mounting chips on the lead frame;

(c) providing connecting parts which  
electrically connect electrode pads of said chips and  
the metallic films;

       and supporting the connecting parts on the metallic  
films supported by the lead frame; and

1 (e) separating from the lead frame the  
molded resin packages together with the metallic films  
provided to resin projections which are counterparts  
of said recess portions.

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28. The method as claimed in claim 27,  
10 wherein said step (e) comprises a step of etching the  
lead frame and thereby dissolving the lead frame.

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29. The method as claimed in claim 27,  
wherein said step (e) comprises a step of mechanically  
separating the lead frame from the molded resin  
packages and the metallic films.

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30. The method as claimed in claim 27,  
25 further comprising a step of providing a tape member  
to the molded resin packages before said step (e) is  
executed.

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31. The method as claimed in claim 27,  
wherein said step (c) comprises a first step of  
providing bonding balls to the metallic films and a

and said bonding wires corresponding to said

1 connecting parts.

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32. The method as claimed in claim 27,  
wherein said step (d) molds the resin so that the  
molded resin packages are joined together.

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33. The method as claimed in claim 27,  
wherein said step (d) molds the resin so that the  
15 molded resin packages are separated from each other.

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34. A device comprising:

a chip;

a resin package sealing said chip, said  
resin package having a mount-side surface of the resin  
package;

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metallic films respectively provided in the  
resin package so that the metallic films are flush  
with the mount-side surface and are exposed therefrom;  
and

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connecting parts electrically connecting  
electrode pads of said chip and the metallic films.

APPENDIX C

said connecting parts respectively comprise

1 bonding wires, and bonding balls respectively provided  
to the metallic films; and  
said bonding wires are bonded to said  
electrode pads and said bonding balls.

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10 36. The device as claimed in claim 34,  
wherein each of said metallic films is a single layer  
made of a metallic substance.

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37. The device as claimed in claim 34,  
wherein each of said metallic films comprises a  
plurality of metallic layers which are stacked.

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25 38. The device as claimed in claim 34,  
wherein said connecting parts respectively comprise  
bumps provided between the electrode pads of the chip  
and the metallic films.

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39. A method of producing devices  
respectively having chips sealed by resin packages,  
said method comprising:

1. MOUNTING CHIPS ON MOUNTING ELEMENT

(c) providing connecting parts which

1        electrically connect electrode pads of said chips and  
the metallic films;

5                (d) molding resin so that molded resin  
packages respectively cover the chips and metallic  
films supported by the lead frame; and

10                (e) separating from the lead frame the  
molded resin packages together with the metallic films  
so that the chips are exposed from mount-side surfaces  
of the molded resin packages.

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15                40. The method as claimed in claim 39,  
wherein said step (e) comprises a step of etching the  
lead frame and thereby dissolving the lead frame.

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25                41. The method as claimed in claim 39,  
wherein said step (e) comprises a step of mechanically  
separating the lead frame from the molded resin  
packages and the metallic films.

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30                42. The device as claimed in claim 1,  
wherein:

              said metallic films respectively have lead  
portions, which are sealed by the resin package and  
extend toward the chip; and

              said connecting parts include bonding wires

1               43. The device as claimed in claim 42,  
further comprising a heat radiating member sealed by  
the resin package, the chip being provided on said  
heat radiating member.

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1               44. The device as claimed in claim 1,  
10 wherein:

said connecting members respectively  
comprise bumps provided between the electrode pads of  
the chip and the metallic films.

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45. The device as claimed in claim 1,  
wherein:

20               said metallic films respectively have lead  
portions, which are sealed by the resin package and  
extend toward the chip; and

25               said connecting parts include bumps provided  
between the electrode pads of the chip and the lead  
portions of the metallic films.

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46. The device as claimed in claim 1,  
wherein: ,

said metallic films respectively have lead  
portions, which are sealed by the resin package and  
extending toward the chip, and the bump portions  
are positioned in said recess portions and are

provided between the electrode pads of the chip and the lead portions of the metallic films.

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47. The device as claimed in claim 44,  
wherein a back surface of the chip opposite to a  
surface on which the electrode pads are provided is  
10 exposed from a surface of the resin package opposite  
to the mount-side surface thereof.

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48. The device as claimed in claim 47,  
further comprising a heat radiating member attached to  
the back surface of the chip.

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49. The device as claimed in claim 44,  
further comprising an insulating member provided to a  
25 surface of the chip on which the electrode pads are  
provided.

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50. The device as claimed in claim 44,  
wherein said connecting parts comprise an electrically  
conductive resin containing conductive particles